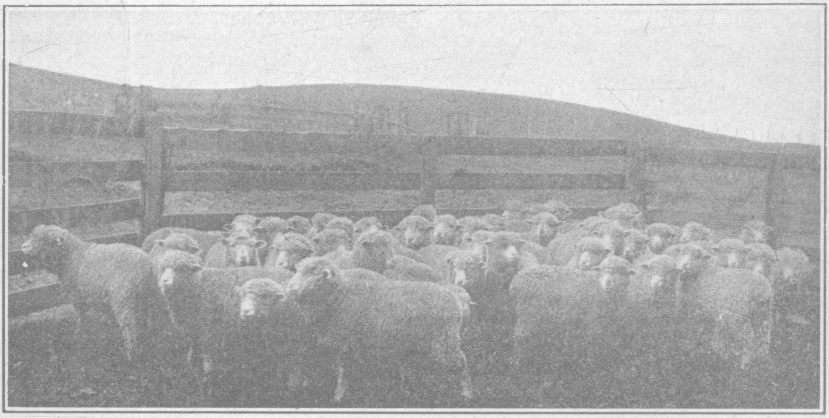
FATTENING RANGE LAMBS.

OHIO

Agricultural Experiment Station.

WOOSTER, OHIO, U. S. A., NOVEMBER, 1907.

BULLETIN 187.



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The Bulletins of this Station are issued at irregular intervals. They are paged consecutively and an index is included with the Annual Report, which constitutes the final number of each yearly volume.

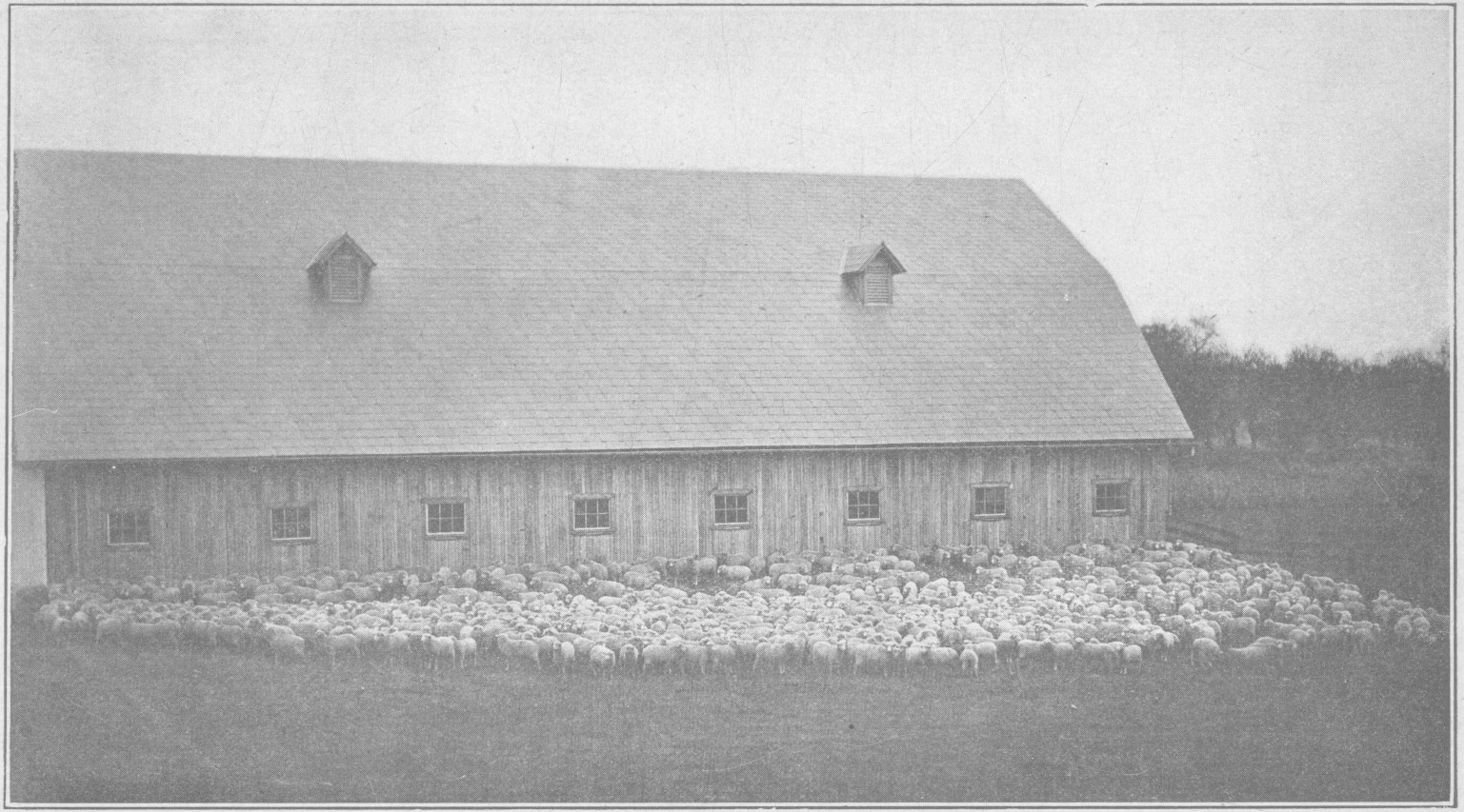

PLATE I—Barn (west view) in which both experiments were conducted, and flock from which experimental lambs of 1905-06 were selected.

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ACKNOWLEDGMENT.

To Mr. S. J. Fryer, whose cordial cooperation has made it possible to conduct the two experiments reported herein, the author is glad to express his thanks for the assistance rendered both in planning and in executing the details of the experiments.

BULLETIN

OF THE

Ohio Agricultural Experiment Station

NUMBER 187. NOVEMBER, 1907.

FATTENING RANGE LAMBS.

BY B. E. CARMICHAEL.

INTRODUCTION.

The sheep industry of Ohio, with her more than 2,000,000 sheep, is one of the important branches of agriculture of the state. Indeed, in some sections the conditions seem better suited to sheep husbandry than to any other kind of stock growing. Whether the prime object of the flock owner is to produce wool or to produce mutton, sooner or later a large number of the sheep or lambs are fattened for market.

According to the report of the Secretary of the State Board of Agriculture, under date of August 1, 1907, there were, in April, 1907, 2,017,325 sheep in Ohio. It is not possible to state definitely the number of these sheep that have been fattened for market, or will be fattened during the year, but the number is large.

The matter of selecting the ration for sheep that are to be fattened is an important one and one upon which, to a marked degree, the profits from feeding depend. The Department of Animal Husbandry of this Station has undertaken a series of experiments to compare various rations, and the results of the first two years' work show something of the importance of using rations that have been carefully selected. Since it has not been possible to deal with more than one phase of the fattening of sheep, it seems best that lambs have been used, for, as a usual thing, rations that will give good results with lambs should be suitable for older sheep. While, perhaps, this cannot be said to be true in all cases, yet a ration that is markedly extravagant for lambs would probably not be economical for older sheep. It is believed, then, that the results, as secured to date, while secured from work with range lambs, will, in general, apply to native lambs and to mature sheep as well.

Pursuing the line of work in experimental fattening of range lambs that was begun in cooperation with Mr. S. J. Fryer, in November, 1905, the experiment reported in this bulletin was conducted at Mr. Fryer's farm in Wayne county during the winter of 1906-07. A part of the experiment is, substantially, a duplication of the work of 1905-06. The results of the work of 1906-07 are presented in the first part of this bulletin, after which a summary of the two years' work is given in a condensed form.

OBJECTS.

The objects of this experiment were:

1 To secure additional data on the advisability of feeding a proprietary stock food or linseed oilmeal to fattening range lambs in connection with corn and a nitrogenous roughage (clover in this case).

2 To compare heavy feeding of grain with moderate feeding of grain.

3 To compare the rate of gains made by ewe lambs and by wether lambs.

4 To secure additional data on that subject of great and growing importance, the production of manure by farm animals.

The experiment of 1905-06 did not deal with the heavy grain ration, nor with the comparative rapidity of gains by ewes and by wethers. In other essentials the two experiments were very similar. In the second experiment only one nitrogenous concentrate—linseed oilmeal—was tested, while in the former, both linseed oilmeal and cottonseed meal were tested. During the first experiment the roughage consisted of alfalfa, clover and some bluegrass. During the second experiment only clover hay was fed.

LAMBS USED IN THE EXPERIMENT.

176 head of lambs in four lots of 44 each were used in this experiment. Three of these four lots contained 22 ewes and 22 wethers; one lot contained 23 ewes and only 21 wethers. They were selected from a lot of about 350 head of Wyoming-bred lambs, purchased for Mr. Fryer by a Chicago commission firm. They were thrifty and vigorous, but not so growthy as the lambs used in the previous test (see Plate I), apparently carrying a much greater percentage of Merino blood than did the lambs fed in 1905-06. A fair idea of the breeding of the two lots may be gained from the statement that the wool shorn in 1906 graded "one-quarter" to "three-eighths", while that shorn in 1907 graded "medium" as graded by the local buyers. In neither instance were the lambs that were used in the experiment shorn, but other lambs from the same bands that the experimental lambs were selected from were shorn.

TREATMENT PREVIOUS TO EXPERIMENT.

The lambs were shipped from Chicago on November 5, 1906, arriving at the farm the following day, November 6th. They were allowed to graze upon bluegrass pasture with no grain until November 13th, after which time they were put into the barn each night and fed a very small amount of shelled corn—only about four quarts to the entire flock of about 350 head. The lambs were very slow in learning to eat grain: on November 27, when first shut in the barn permanently, the entire flock received one-half bushel of grain daily. This amount was gradually increased, so that when the experiment began, on December 22, each of Lots 1,2 and 4 received 24 pounds of grain, while Lot 3 received 26 pounds. Hay was kept in the racks before the lambs from the time they were first kept in the barn at night. While on grass during the day they consumed very little hay, but ate it readily after being shut in the barn permanently.

RATIONS.

All of the lambs were fed corn and clover hay alike, until the initial weights for the experiment were secured.

It was planned to feed grain rations as follows to the four lots of lambs.

Lot 1, corn, 5 parts; linseed oilmeal, 1 part.

Lot 2, corn, stock food.

Lot 3, corn (about one-sixth more than lot 4 received).

Lot 4, corn.

Lots 1, 2 and 4 received, as a rule, the same amount of grain daily per lot. Table I shows the average amount of the various concentrates consumed daily by each of the four lots of lambs during each of the four four-week periods of the test.

All four lots of lambs were fed clover hay in such quantities as they would consume without excessive waste. The clover was of good quality. The amount of clover refused by the various lots will show something of its purity. Some coarser parts of the plants were left, but what was left was not very palatable and had little feeding value. All corn used was shelled before weighing and feeding.

In this experiment most of the oilmeal used was finely ground. A small amount of the "pea size" was used. At first the lambs did not seem to relish the finely ground meal, but soon came to eat it very well.

The stock food was of the same brand and lot that was used in the previous experiment, purchased from a local dealer. The lambs ate it very readily throughout the experiment.

TABLE I—Food consumed daily by each lot at different periods, pounds.

Lot	Ration	First four weeks	Second four weeks	Third four weeks	Fourth four weeks
1	Corn	24 96	40.71	48 57	50.00
	Oilmeal	4.11	8 14	9 71	10 00
	Clover	59.88	57.26	48.63	42.54
2	Corn	29 07	48.86	58.29	60 00
	Stock food	.17	.32	32	32
	Clover	60.52	58.01	47.89	42.01
3	Corn	33.18	57 00	57.59	57.01
	Clover	59 91	52.45	40.51	40.56
4	Corn	29.07	48.86	54.02	56 81
	Clover	61 24	55.79	43 89	40 53

The lambs in Lots 3 and 4 refused some of their grain during part of the experiment, and, on this account, their grain allowance was reduced somewhat, as shown in Table I. Aside from the above, the lambs of all lots ate very well after becoming accustomed to their ration. As was previously stated, however, they learned very slowly to eat grain. In the former experiment, the same amount of roughage was allowed each lot. In this experiment, it was desi.ed to feed each lot all the hay that would be eaten, so as to asçertain more concerning the effect of the stock food and the nitrogenous concentrate—oilmeal in this instance—upon the consumption of roughage.

FEEDING.

As in the former experiment, each day's ration was fed in two equal portions: grain was fed at 7 a. m. and 4 p. m. followed by hay in each instance. The lambs soon became accustomed to this regularity, and were usually very quiet between feeds.

BEDDING.

Wheat straw was used for bedding, being supplied at all times in sufficient quantities to keep the pens from becoming at all filthy. Besides the wheat straw, the refuse hay, consisting chiefly of the less palatable portions of the clover hay, was used as bedding for the lot which refused it. The average daily amount of bedding (straw and refuse hay) for each of the lots was as follows: Lot 1, 10.74 pounds; Lot 2, 10.50 pounds; Lot 3, 10.70 pounds; Lot 4, 10.93 pounds. During the later part of the experiment more bedding than usual was used so as to render the manure more easily handled by a manure spreader, as it was found that with the smaller allowance of bedding the manure was too solid to work well in the spreader.

SALT.

Each lot of lambs received, twice weekly, until February 26, one and one-fourth pounds of a mixture made up, by weight, of four parts salt to one part sulphur. Beginning February 26, one and one-half pounds of the mixture was fed to each lot twice weekly.

QUARTERS.

The lambs were fed in a barn 64 by 100 feet (see Plate I) with hay storage above. A row of 8 pens 12.5 feet wide by 26 feet long (these measurements include the space occupied by feed racks and watering tanks) was on each side of the barn, with a 12-foot driveway between the two rows of pens. Racks for hay and grain extended along each side of each pen, giving about 50 feet of feeding space for each 44 lambs; water was supplied in automatically regulated tanks, one located at the end of each alternate feeding rack, so that one tank furnished water for two lots. The racks and tanks thus arranged formed the partitions between the different pens.

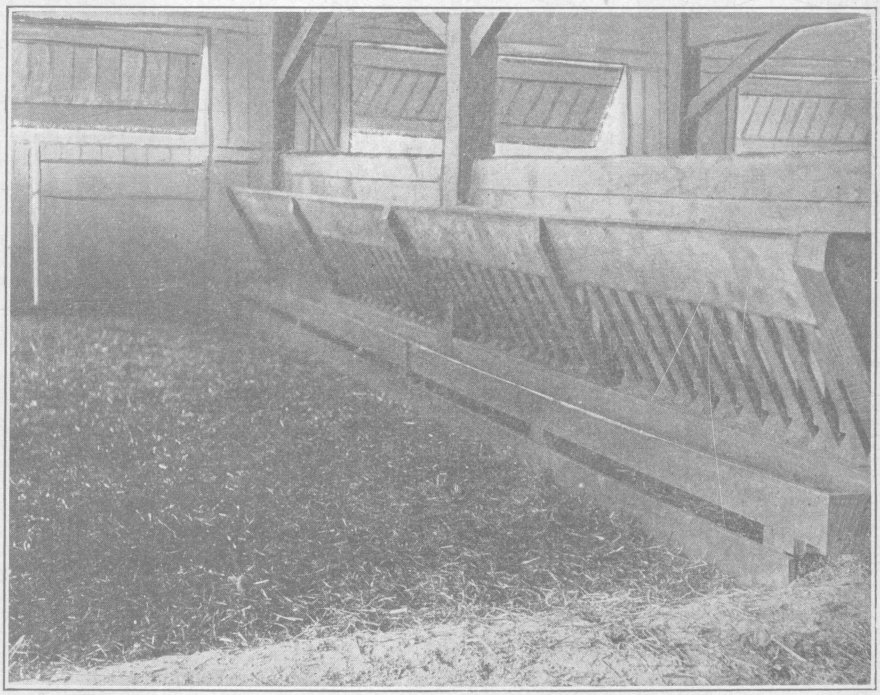

PLATE II—Showing construction of combined hay and grain rack.

Vertical partitions (shown in Plate II) divided the racks for the lots under experiment. Besides the doors (on the east) and windows (on the west) there were large doors at each end of the driveway and a large opening at the center of the barn, into the haymow, from which opened four small ventilators, two on each side of the roof, (see Plate I).

The pens occupied by the four lots used in this experiment were the north four pens east of the alley. Lot 1 was farthest north, the lots being numbered consecutively towards the south.

Throughout the experiment the lambs were taken from the pens once each week to be weighed, but aside from this were seldom out of the pens, which afforded only a trifle over 7 square feet per lamb. Although these range lambs had previously been accustomed to an abundance of outdoor exercise, they seemed to suffer no inconvenience from the close confinement.

WEIGHTS OF LAMBS.

While all lots were yet receiving corn and clover, each lot of lambs was weighed for three consecutive days at 7 a. m., before food or water had been given. The average of these three weights is considered the initial weight. At the close of the experiment the final weight of each lot was ascertained in the same manner. In all instances the lambs were kept from water after 5 p. m. of the day previous to the weighing. As is usually the case, it was found that the weights of any given lot varied considerably from day to day. The reason for this variation is not apparent, but its occurrence is a matter of common observation, even when the strictest regularity is observed in feeding and weighing. Throughout the experiment each lot of lambs was weighed once every Friday at 7 a. m., having been kept from water since 5 p. m. of the previous day.

TABLE II—Weekly, initial and final weights, and weekly gains.
All weights taken at 7 o'clock a. m.

Date	Lot 1		Lot 2		Lot 3		Lot 4	
	Weight lbs.	Gain lbs.	Weight lbs.	Gain lbs.	Weight lbs.	Gain lbs.	Weight lbs.	Gain lbs.
Dec. 20	2,145	....	2,155	.....	2,180	.....	2,145	.....
" 21	2,150	.. .	2,175	.....	2,220	... ..	2,165	.....
" 22	2,165	... ..	2,185	.....	2,210	.....	2,150	.....
Initial average...	2,153⅓	.....	2,171⅔*	.....	2,203⅓	... ..	2,153⅓	.....
Dec. 28	2.205	51⅔	2.220	48⅓	2.280	76⅔	2.220	66⅔
Jan. 4	2.265	60	2.275	55	2,340	60	2.260	40
" 11	2.290	25	2.305	30	2,365	25	2.290	30
" 18	2.310	20	2,350	45	2.415	50	2.345	55
" 25	2,410	100	2,450	100	2,535	120	2,430	80*
Feb. 1	2,480	70	2 535	85	2 635	100	2.530	100
" 8	2.600	120	2 630	95	2.755	120	2,650	120
" 15	2 680	80	2 705	75	2.820	65	2.705	55
" 22	2.720	40	2 755	50	2,880	60	2.765	60
Mar. 1	2 830	110	2.860	105	2.980	100	2,825	60
" 8	2.895	65	2.940	80	2.960	—20	2.875	50
" 15	2 975	80	3 015	75	3.065	105	2,950	75
" 22	3.035	60	3.070	55	3.150	85	3,050	100
" 29	3 105	70	3 130	60	3,175	25	3 030	—20
Apr. 5	3,210	105	3.265	135	3.275	100	3.185	155
" 11	3,310	.....	3,320	.....	3.400	.....	3,290	.....
" 12	3,305	.. ..	3,315	....	3,390	.....	3,270	.....
" 13	3 315	.....	3.335	.....	3,405	.....	3,310	.....
Final average. ...	3,310	100	3,323⅓	58⅓	3,398⅓	123⅓	3.290	105
Total gain, lbs....	.....	1.161⅔**	.....	1,151⅔	.....	1,200**	.....	1.136⅔**

*One lamb died in Lot 4, January 18, weight 60 lbs. replaced by a lamb weighing 65 lbs.; 5 lbs deducted from gains marked (*) on this account.

**One lamb shorn, weight of fleece estimated at 5 pounds; 5 pounds added to gains as shown by weights on this account.

Table II gives in detail the initial, weekly and final weights of each lot, together with the gains made by each lot each week and for the entire period. A study of this table will show the variations that were observed.

One lamb in each of Lots 1, 3 and 4 lost, from some unknown cause, the most of its wool. Before being marketed these lambs were shorn completely. The weight of their wool was estimated at 5 pounds each, and this amount was added to the final weight and to the Pittsburg weight of each of these 3 lots. This applies to all tables dealing in any way with these weights.

TABLE III—Summary of weights and gains.

Lot	Grain ration	Initial weight	Final weight	Total gain	Daily gain per lamb.
		lbs.	lbs.	lbs.	lbs.
1	Corn and oilmeal... . ..	2,153.3	3,315	1.161.7	.236
2	Corn and stock food.....	2,171.7	3,323 3	1,151.7	.234
3	Corn (heavy).....	2,203 3	3,403 3	1,200	.244
4	Corn.....	2,153.3	3,295	1,136 7*	231

*One ewe lamb died in Lot 4, January 18; weight 60 pounds; replaced by ewe lamb weighing 65 pounds.

Table III shows a summary of weights and gains for the entire period. It will be observed that the daily gains made by Lots 1, 2 and 4 are almost exactly equal, while Lot 3 made somewhat higher gains. Although the rate of gains is approximately equal for Lots 1, 2 and 4, yet Tables IV and V show that quite an appreciable difference exists in the amount and cost of feed required to produce a given gain by the various lots.

TABLE IV—Food consumed per 100 pounds gain.

Lot	Ration	Pounds feed consumed per 100 pounds gain.			
		Clover hay	Corn	Oilmeal (*) Stock food (†)	Total
1	Corn, oilmeal and clover...	502.10	395.90	77 04*	975 04
2	Corn, stock food and clover	506 74	477.05	2 78†	986 57
3	Corn (heavy) and clover ..	451 33	477.81	.....	929.14
4	Corn and clover.....	496 23	464.98	.....	961.21

It will be seen in Table IV that the two Lots, 3 and 4, (fed corn and clover hay) heavy and medium grain rations, respectively, led in the order mentioned in producing a given gain with low consumption of feed. Lot 1, fed corn, linseed oilmeal and clover hay, made higher gains than did Lot 4 and also consumed more feed and required a greater number of pounds of feed for a given gain. Lot 2, fed corn and stock food required more corn than did any other lot save Lot 3 and more hay than did any other lot to produce 100 pounds gain.

COST OF GAINS.

TABLE V—Food consumed; gains produced; cost of gains.

Kind of feed.	Price.	Lot 1		Lot 2		Lot 3		Lot 4	
		Amount	Value	Amount	Value	Amount	Value	Amount	Value
Corn	40 cts per bu.	82.125 bu.	$32.85	98 107 bu.	$39.24	102 388 bu	$40 96	94 379 bu.	$37 75
Oilmeal	$32 per ton	.4475 ton	14.32	.....	.....	.....	.....	.....	.....
Stock food	5 cts per lb	.. ..	.....	32 lbs.	1.60	.....	.....	.....	....
Clover hay	$12 per ton	2.9164 ton	35 00	29 18 tons	35 02	2 708 tons	32 50	2.82 tons	33 84
Total value of feed ..			$82.17		$75 86		$73.46		$71 59
Total gain, lbs			1,161.7		1,151.7		1,200		1,136.7
Daily gain per head..			.236		234		.244		.231
Cost per lb. gain *on basis of above prices*			7.073 cts.		6 587 cts.		6.122 cts		6.298 cts.

The cost of one pound gain in live weight by each of the lots is shown in Table V. The figures apply only to the market conditions which prevailed for this test, so are not nearly so widely applicable as are the data concerning the amount of feed consumed by each lot to produce 100 pounds gain. The author is thoroughly convinced that too important a place is often given to the *cost* of gains when discussing the results of a feeding experiment, thus rendering more probable a wrong understanding by the student or feeder. When feeders and experimenters think, reckon and write concerning feeding experiments with *amount* of feed and *rate* and *extent* of gain in live weight, *rather than with cost* of feed, animals and gains and *net profit* from the operation as the factors for comparisons, it will be reasonable to expect more intelligent selection of rations and consequently fewer failures to secure satisfactory returns for feed and labor required to conduct feeding operations.

TABLE VI—Cost of gains as affecting cost of fat lambs.*

Cost per 100 pounds gain.	Corn (heavy)	Corn (medium)	Corn and stock food	Corn and oilmeal
	$6 12	$6.30	$6 59	$7.07
Assumed home cost of feeder lambs per hundredweight.	Prices at which fat lambs in the various lots would need to sell per hundredweight at home to pay for feeder lambs and gains produced on basis of assumed prices of feeder lambs and feeds.**			
$3.00	4 10	4.16	4.27	4.44
4.00	4 75	4.81	4.91	5.08
5.00	5.40	5.46	5 56	5.73
6 00	6.04	6 11	6.21	6.38
7.00	6 69	6 75	6.86	7.02
8.00	7 34	7.40	7.50	7.67

*In making calculations for this table it is assumed that each lot weighed 2,203½ lbs. at the beginning of the experiment and gained 1,200 lbs. See page 19.

**Corn, 40 cents per bushel; oilmeal, $32.00 per ton; stock food, 5 cents per pound; clover hay, $12.00 per ton.

The writer would not be understood as saying that a financial statement is of no value or that nothing should be said concerning the cost of gains. On the contrary, each has a value, but it is believed that in either case the value is far less important than is the matter of the amount of feed required to produce a given gain, on account of the sudden and wide variation in price that may occur.

Table VI is intended to show the effect that the different costs of gains made by the four lots have upon the prices at which lambs bought at various prices, ranging from $3.00 to $8.00 per hundredweight, may be sold without loss. Neither rapid gains nor cheap gains are necessarily the most profitable. Sometimes the most rapid gains are so expensive as to do away with all profit. Again, cheap gains are often so slow as to prevent making a sufficient number of pounds to provide any considerable profit. It is desirable to secure gains that are both cheap and rapid, and to do this it is necessary to find efficient feeds that are not too high in price. The work done by this Station in fattening lambs indicates that corn and clover or alfalfa constitute such a ration under normal market conditions. Other rations may be used with satisfactory results, but when corn and clover or alfalfa are available at moderate prices, it seems improbable that any other feeds can be used with increased profit, unless unusual prices prevail for feeds. This table is based upon the prevailing prices of feeds during the experiment, and would, of course, be affected by changed prices, It is assumed, and the calculations for this table are based upon the assumption, that all lots weighed the same, 2,203⅓ pounds, when put on experiment, and that all lots made the same gain, 1,200 pounds; this is not strictly accurate, but it is impossible to ascertain the real bearing of the cost of gain upon the cost of fat lambs when other factors vary. This, again, emphasizes the fact that financial statements of experimental work in feeding livestock often fall far short of telling the whole of the facts of the case.

RESULTS FROM LINSEED OILMEAL AND STOCK FOOD.

Unless linseed oilmeal can be purchased at approximately as low a price as corn per pound no profit from its use with corn and clover hay for fattening lambs is to be expected. This discussion applies only to feeding linseed oilmeal with a nitrogenous roughage and should not be understood to mean that linseed oilmeal may never be fed with profit. As regards the use of the stockfood tested in both experiments, little can be said either for or against its use. While the total cost is not great, the results of either test do not show any great advantage from its use—neither is any particular disadvantage

shown. With such negative results, no reason is apparent for using stock food, as there is necessarily some added expense and some inconvenience in feeding it. Tests of various proprietary stock foods at other stations and with other kinds of stock have shown no great advantage from them, and evidence is not at hand to warrant any encouragement of their use—on the contrary, the bulk of evidence indicates that their use should be discouraged.

HEAVY AND MEDIUM CORN RATIONS.

As previously stated, the plan of this experiment provided for a comparison of a heavy corn ration with a moderate one. The grain allowance for Lot 3 was increased more rapidly than was that for Lot 4, the purpose being to feed Lot 3 one-sixth more corn than Lot 4 received. This amount proved to be more than they would eat, and the total grain eaten by Lots 3 and 4 was 5,733.75 pounds and 5,285.25 pounds, respectively; that is, the lambs in Lot 3 ate about one-twelfth more grain than did those in Lot 4. The increased grain consumption was, naturally, accompanied by a lower consumption of roughage, 5,416 pounds by Lot 3, as compared with 5,640.5 pounds by Lot 4.

So far as consumption of food for 100 pounds gain is concerned, the results of this comparison show an advantage from the use of the heavier grain ration, as is shown by Table IV, page 17.

TABLE VII—Cost per hundred pounds gain for Lots 3 and 4 with feeds at various prices.

Hay per ton	$6 00	$6 00	$9 00	$12 00	$9 00	$9 00	$6 00	$12 00
Corn per bushel	60 cts	45 cts	45 cts	45 cts	30 cts	60 cts	30 cts	60 cts
Lot 3	$6 558	5 308	6 043	6 776	4 762	7 322	4 028	8 056
Lot 4	6 599	5 353	6 161	6 970	4 916	7 407	4 108	8 215

Table VII shows the effect of a heavy grain ration as influenced by varying market prices of hay and corn. It will be observed that with clover hay at $6.00 per ton and corn at 60 cents per bushel the cost of gains made under the two systems would be practically equal. With hay higher and corn the same price, or lower, the gains would cost somewhat less with the heavier corn ration. Not only would the gains be cheaper but the feeding period would be shorter, thus decreasing the cost of labor, interest on investment, and insurance.

The feeding of a heavy corn ration requires closer watchfulness on the part of the feeder and is doubtless associated with an added possibility of loss due to over-feeding. The differences which were observed in this test are not particularly large, and may not be

borne out by future results; yet it is believed that they are worthy of consideration in relation to the fattening of lambs under varying market conditions. Further work along this line is contemplated.

It is entirely possible that other problems of farm management would sometimes make the feeding of a heavy allowance of roughage very desirable, even if a somewhat lower gain by the lambs would result. For instance, feeders often have a proportionately larger amount of roughage than of grain, or a heavy production of manure may be desirable, without time for feeding two lots of lambs. The inexperienced feeder would doubtless find it best to proceed cautiously and feed a more moderate grain ration until he has become intimately acquainted with his work.

RATE OF GAIN BY EWES AND WETHERS.

TABLE VIII—Weights and gains of ewes and wethers.

		Lot 1		Lot 2		Lot 4.	
		22 Ewes	22 Wethers	22 Ewes	22 Wethers	22 Ewes	22 Wethers
		lbs.	lbs	lbs	lbs.	lbs	lbs
Initial weight.....	Dec 17th	1,070	1,110	1.105	1,120	1,080	1 100
Final weight. ...	Apr 13th	1,630	1.710	1.645	1 715	1.625	1,715
Gain, 117 days.....	.....	560	600	540	595	545	615
Ave daily gain .	.....	218	.233	210	231	.212	239

Total gains of wethers..... .... 1 810 pounds.
Total gains of ewes .... 1,645 pounds.
Excess of wethers' gains over ewes' gains..... ... . 10 03 percent.

Data concerning the rate of gain made by ewes and by wethers were secured with Lots 1, 2 and 4. 22 ewes and 22 wethers were in each of these lots. The ewes and wethers were weighed separately only once, on account of the inconvenience of securing three daily weighings. In each pen the wethers made greater gains than did the ewes. While this difference was not great, yet it was true with all three of the lots. As will be seen, the wethers made approximately 10 percent greater gains than did the ewes. Further work along this line is planned, from which it is hoped that data relating to the cost of gains as well as to the rate of gains may be obtained.

SHIPPING, YARDING AND SALE.

The lambs, with 30 thers not in the experiment, were shipped from Big Prairie on April 16, being loaded in the afternoon. They were sold on the regular market at Pittsburg, April 17. All lots were sold together at $8.90 per hundredweight. The 206 head were allowed free access to water and were fed 2 bushels of corn and 350

pounds of hay before they were sold. Before being weighed the lambs were separated according to the rations upon which they had been fattened. The lambs were kept in the yards until Saturday, April 20, when they were slaughtered.

EXPENSE OF SHIPPING.

TABLE IX -Cost of marketing (apportioned on basis of live weight at Pittsburg)

	Lot 1	Lot 2	Lot 3	Lot 4
Freight for double deck	$4 11	$4 15	$4 21	$4 11
Yardage @ 4 cts per head	1 76	1 76	1 76	1 76
Hay @ $1 50 per hundredweight	1 09	1 10	1 12	1 09
Corn @ $1 25 per bu	52	52	53	52
Commission @ $10 for doubledeck load	2 49	2 51	2 55	2 49
Total	9 97	10 04	10 17	9 97

Table IX presents a detailed statement in regard to the cost of marketing these lambs. 206 lambs were included in the shipment, the cost of marketing the 176 head being calculated according to the weight of the lambs at Pittsburg. It will be noted that the shrinkage from shipping was approximately the same per hundredweight for each of the lots.

SHRINKAGE AND DRESSED PERCENTAGES.

TABLE X—Shrinkage, expense of marketing, selling price, dressed percentages and home value.

Lot	Farm weight, April 16	Pittsburg weight, April 17	Shrinkage per cwt.	Dressed weight April 20	Dressed percentages	Expense of marketing exclusive of shrinkage	Selling price per cwt at Pittsburg April 17	Value of lambs per cwt at farm April 16
	lbs	lbs.	lbs	lbs				
1	3 445	3,215	6 68	1 577	¢49 05	$ 9 97	$8 90	$8 02
2	3,470	3,240	6 63	1,555	47 99	10 04	8 90	8 02
3	3 535	3,295	6 79	1 605	48 71	10 17	8 90	8 01
4	3,435	3,215	6 41	1 572	48 90	9 97	8 90	8 04

The shrinkage from shipment and the dressed percentages yielded by the various lots are shown in Table X. No striking differences in either shrinkage during shipment or in dressed percentage are apparent; in fact, the range of variation is so slight that it may be said that the four lots shrank and dressed practically the same. Lot 3 fed a heavy corn ration shows a slightly higher shrinkage and a lower dressed percentage than does any other lot save Lot 2. This is hard to account for, since the feeding of a heavy grain ration would be expected to produce more fat, with a consequent lower shrinkage and higher dressed percentage.

Since the shrinkage from shipping and the cost of marketing were almost exactly the same and the selling price was the same, it follows that, as is shown in Table X, the home value per hundredweight was practically the same for all of the lots.

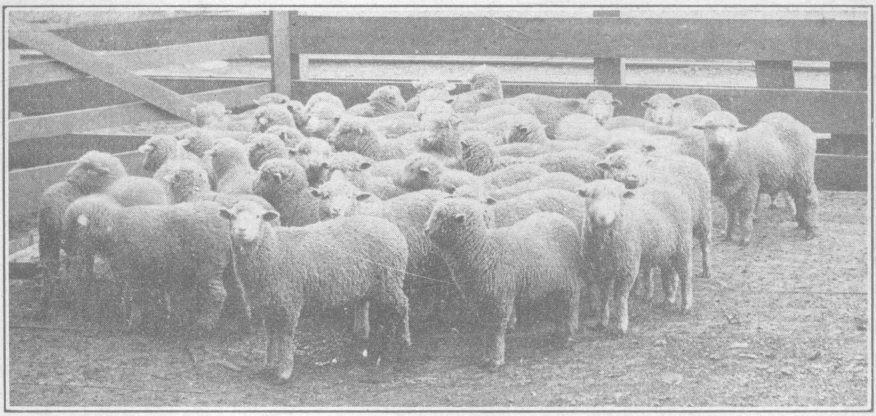

PLATE III.

Lambs at market, just previous to slaughter.
Lot 1, fed corn; linseed oilmeal and clover hay.

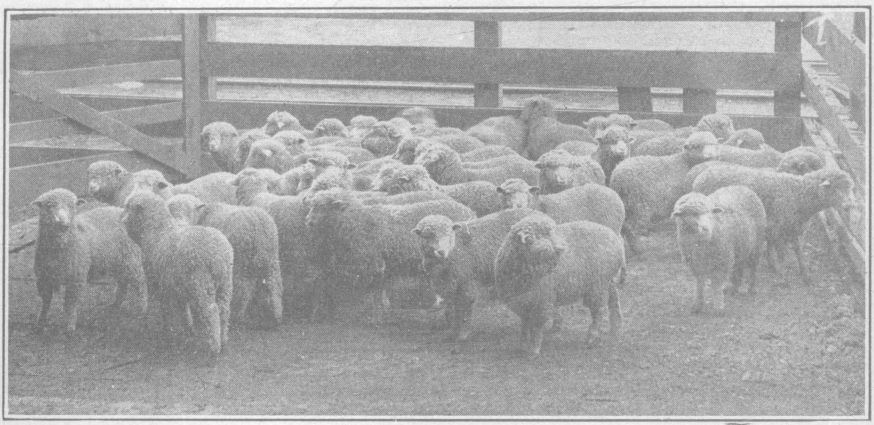

PLATE IV.

Lambs at market, just previous to slaughter.
Lot 2, fed corn, stock food and clover hay.

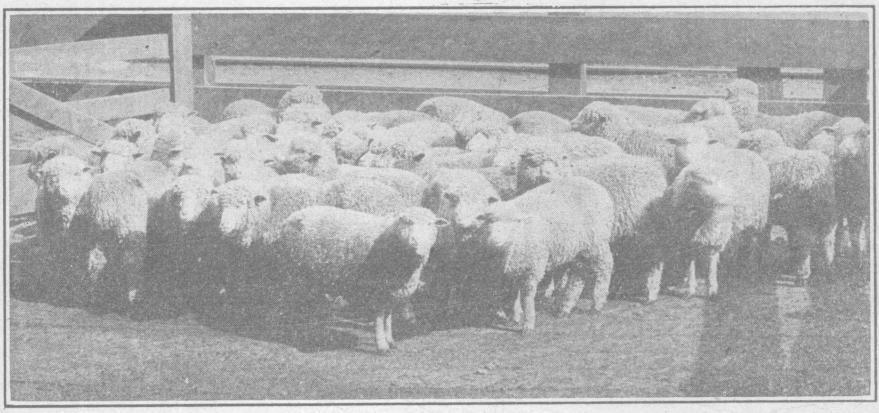

PLATE V.

Lambs at market, just previous to slaughter.
Lot 3, fed heavy corn ration and clover hay.

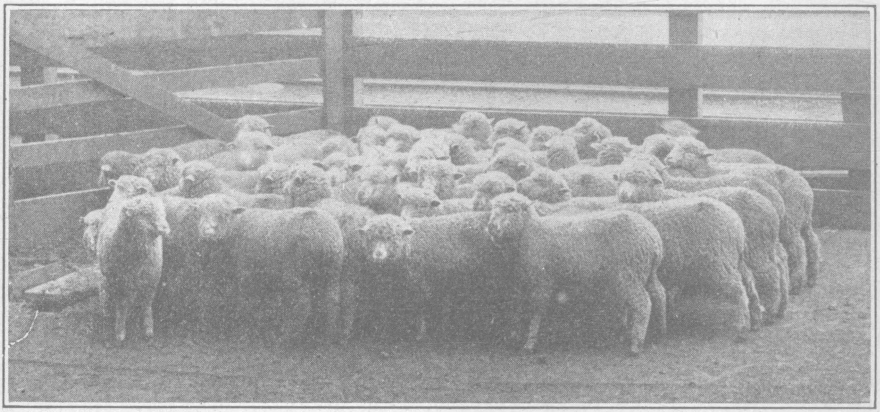

PLATE VI.

Lambs at market just previous to slaughter.
Lot 4, fed medium corn ration and clover hay.

LOSS OF LAMBS.

The loss of lambs during the progress of the experiment was very light—only one of the 176 head on experiment being lost. During the first month after the lambs arrived at the farm the losses were rather heavy. The entire loss from the time the 361 lambs were received at the farm on November 6, until the time of the last shipment was 14 head. There is likely to be a heavier loss with young, small lambs just weaned than with older, stronger ones, as the weaning, shipping and complete change of climate and conditions in general subject the lambs to very trying circumstances. After these lambs became accustomed to their new environment the loss was very small, indicating that the sudden change of conditions was probably responsible for the loss at first. As was stated in Bulletin 179, the loss of lambs in 1905-06 was very light—probably due in some measure at least to their being larger and stronger than the lambs fed in 1906-07, and being allowed a longer run on grass.

CONSUMPTION OF ROUGHAGE.

TABLE XI—Roughage.

Lot	Ration	Roughage fed, Lbs.	Roughage refused, Lbs.	Roughage consumed
1	Corn, oilmeal and clover.....	6,296	463.25	5,832.75
2	Corn, stock food and clover ..	6,272	436.00	5,836 00
3	Corn and clover (heavy corn).	5,874	458.00	5,416.00
4	Corn and clover	6,125	484.50	5,640 50

The experiment previously conducted indicated that the use of a nitrogenous concentrate or of the stock food slightly increased the consumption of roughage. Inasmuch as each lot of lambs received, in the experiment of 1905-06, the same amount of roughage, it was not possible to secure as conclusive data on this point as were desired. On this account, as previously stated, it was thought advisable to feed the lambs in each lot in this test all the hay they would eat. The data presented in Table XI support the data secured in the first experiment. The increased roughage consumption when oilmeal was fed was in either case very small—in this test slightly over 3.4 percent—in the first test only 2.39 percent. The increase in roughage consumption when the stock food was fed was almost exactly the same as with oilmeal in 1906-07 and only slightly less in 1905-06. It is not certain that any practical use can be made of this fact, especially since the amount of food actually consumed per hundred pounds gain in live weight was greater in both instances than when a grain ration of corn alone was fed.

MANURE.

Believing that the matter of manure production, long considered merely incidental to the feeding of live stock, but now recognized, even in the western states, as an important phase of live stock management, is deserving of thorough and extended study, data concerning the amount and composition of manure produced by each lot of lambs during the experiment were secured. It is believed that these data are of importance in showing something of the value of this long neglected and even now not fully appreciated by-product of the live stock industry. Bulletin 183 and Circular 37 of this Station, dealing with manure, its composition, value and methods of handling, may be had upon application.

TABLE XII—Amount and percentage composition of manure produced by lambs in 115 1-2 days beginning December 22, 1906.

	Lot	Weight of manure pounds	Composition (percent of fresh substance)					
			Water	Organic matter	Ash	Nitrogen	Phos acid	Potash
Manure removed February 15, 1907	1	5 920	64 00	30 76	5 24	1 513	516	1 102
	2	6,150	66 25	29 27	4 48	1.297	459	1 032
	3	5,790	64 88	29 83	5 29	1 425	529	1 049
	4	5,525	63 58	30 93	5 49	1 512	501	1 254
Manure removed after experiment	1	5,775	60 08	34 60	5 33	1 855	671	1 395
	2	5,095	57 36	36 06	5 55	1 666	665	1 412
	3	4,640	58 20	36 07	5 73	1 769	634	1.366
	4	4,310	54 55	39 32	6 13	1 896	683	1.568

The manure was removed from each pen once during the experiment and again after its close. A few days before being removed, the manure in each pen was sampled, samples being taken the entire depth of the manure in several parts of the pen. The samples thus taken were analyzed under the direction of Mr. J. W. Ames, Chemist of this Station, with results as presented in Table XII. When the pens were cleaned for the second time, pens 2, 3 and 4 were noticeably dryer than pen 1. The manure produced during this test was allowed to remain in the pens, unmoved, save for what disturbance was due to the lambs moving about, so had a greater value than if it had been subjected to the wasting effect of the weather. As the pens were kept well bedded there was no discomfort to the lambs from the accumulation of manure; in fact, this method of handling the manure is believed to be as satisfactory as any, all things considered.

TABLE XIII—Fertilizing constituents in manure * and commercial value of same.**

		Nitrogen @ 12.75c	Phos. acid @ 3c	Potash @ 5 25c	Total value	Value of manure per ton
Lot 1	Pounds	196 70	69.30	145 80		
	Value	$25.08	$2.08	$7.65	$34.81	$5.95
Lot 2	Pounds	164 65	62 11	135.41		
	Value	$20 99	$1 86	$7 11	$29.96	$5.33
Lot 3	Pounds	164 60	60 05	124 12		
	Value	$20.99	$1.80	$6.52	$29 31	$5.62
Lot 4	Pounds	165.26	57 12	136 86		
	Value	$21.07	$1.71	$7.19	$29 97	$6.09

* See Table XII for amount and percentage composition of manure.

**According to valuation for nitrogen and phosphoric acid in tankage and the valuation of potash in muriate of potash, given in the Official Report of the Secretary of the Ohio State Board of Agriculture on Commercial Fertilizers Licensed, Inspected and Analyzed during the year 1906.

As is shown in Table XIII, the manure produced by the lot that was fed linseed oilmeal contained more nitrogen, phosphoric acid and potash than did that from any of the other lots, and had a higher total value, based upon the commercial value of the various fertilizing constituents. This higher value is largely due to the high nitrogen content of the manure.

TABLE XIV—Cost of feed consumed, bedding used and commercial value of manure produced, 117 days

	Lot 1	Lot 2	Lot 3	Lot
Cost of feed	$84.91	$78 35	$75 90	$74 03
Cost refuse hay* used as bedding @ $4 50 per ton	1 07	1 00	1 06	1.12
Cost of straw used as bedding @ $4.50 per ton	1.72	1.72	1.72	1.72
Total cost of feed and bedding	87.70	81.07	78 68	76 87
Commercial value of manure	34 81	29 96	29.31	29.97
Difference	52 89	51.11	49.37	46.90

*Since the refuse hay was not valuable except for bedding it is charged at the same price as the wheat straw.

Table XIV shows that the increased cost of the ration fed to Lot 1 more than equaled the greater value of the manure produced by this lot. There might be circumstances under which the purchase of nitrogenous concentrates would be advisable solely on account of the higher value of the manure produced from them. Tables XIII and XIV would indicate that this would scarcely be advisable unless nitrogen were needed as a fertilizer and the nitrogenous concentrate could be purchased at a comparatively low price—lower as compared with other feeds than the price paid in this test. If no nitrogenous roughage is available, then the whole consideration is changed, for the use of the nitrogenous concentrate would probably be attended with increased profits from the gains produced.

TABLE XV—Feed consumed and bedding used per ton of manure produced

Lot	Corn lbs.	Oilmeal† Stock food‡ lbs	Hay lbs.	Bedding* lbs.	Total lbs
1	816 417	†159 042	1,024 027	212 227	2 211 713
2	1,014 495	‡5 893	1 066 074	215 384	2 301 846
3	1,139 741		1,068 600	236 673	2,445 014
4	1,117 489		1,178 648	256 634	2 552 771

*Bedding includes straw and refuse hay.

Table XV shows the amount of feed and bedding required by each of the lots to produce one ton of manure. As will be seen, the amount of feed and bedding for one ton of manure varied considerably. It is probable that the chief cause of this variation was the difference in water content of the manure.

As was stated in Bulletin 179, experiments at this Station indicate that a given number of pounds of fertilizing constituents of manure which has been reinforced with phosphorus and has not been exposed to the weather or allowed to heat will produce at least as great an increase of crop as will the same amount and combination of fertilizing elements in the form of the commercial fertilizers mentioned in the note below Table XIII. It is believed that from 25 to 35 cents extra per ton of manure will, under ordinary circumstances, pay well for the extra work involved in applying the manure, above the work required to apply the same fertilizing constituents in the form of commercial fertilizers. With this the case, feeders can well afford to exercise great care in handling the manure from fattening lambs.

The financial statement, Table XVI, is given not so much for its practical value as for the purpose of answering the query, "Did it pay?" which so often arises when a feeding experiment is discussed. Under the conditions of the experiment and with the market prices which prevailed, the feeding operations yielded a good profit. It must be remembered, however, that the financial statement does not apply to any market conditions other than those which prevailed during this experiment. Tables VII and XVII, dealing with various prices for feeds and for feeder lambs and the various costs of gain are of more importance than a statement of the mere financial results of this experiment.

INFLUENCE OF VARYING MARKET CONDITIONS.

Table XVII is prepared on the basis of the results obtained from Lot 3, the lot that made the greatest net profit under the conditions of this experiment. In the calculations for this table, as well as for all tables previously given in this bulletin, the amount of feed actually consumed is used, rather than the amount fed. The hay refused by the various lots was not of good quality—the better parts naturally being eaten first. In Bulletin 179 the amount of

grain consumed and the amount of roughage fed were charged to the lambs in all cases where financial considerations were involved. In the summary of the two years' work, however, all results deal with the amount of food actually consumed

FINANCIAL STATEMENT.

TABLE XVI.

Lot 1.

Dr.

44 lambs, 2153.3 lbs. @ $6.00 per cwt	$129.20
85.25 bus. corn @ 40c. per bu	34.10
.465 tons oilmeal @ $32.00 per ton	14.88
2.994 tons clover hay @ $12.00 per ton	35.93
Cost of marketing	9.97
	$224.08

Cr.

44 lambs, live weight at Pittsburg, 3215 lbs, @ $8.90 per cwt	$286 14
Profit	$ 62.06

Lot 2.

Dr.

44 lambs, 2171.7 lbs. @ $6.00 per cwt	$130.30
101.857 bus. corn @ 40c per bu	40.74
33 lbs. stock food @ 5c per lb	1.65
2.997 tons clover hay @ $12.00 per ton	35.96
Cost of marketing	10.04
	$218.69

Cr.

44 lambs, live weight at Pittsburg, 3240 lbs. @ $8.90 per cwt	$288.36
Profit	$ 69.67

Lot 3.

Dr.

44 lambs, 2203.3 lbs. @ $6.00 per cwt	$132.20
106 138 bus. corn @ 40c per bu	42.46
2.786 tons clover hay @ $12.00 per ton	33.44
Cost of marketing	10.17
	$218.27

Cr.

44 lambs, live weight at Pittsburg, 3295 lbs. @ $8.90 per cwt	$293.26
Profit	$ 74.99

Lot 4.

Dr.

45* lambs, 221.38 lbs. @ $6.00 per cwt	$133.10
97.846 bus. corn @ 40c per bu	39.25
2.898 tons clover hay @ $12.00 per ton	34.78
Cost of marketing	9.97
	$217.10

Cr.

44 lambs, live weight at Pittsburg, 3215 lbs. @ $8.90 per cwt	$286.14
Profit	$ 69.04

*One lamb died in this lot January 18, weight 60 pounds; replaced by another weighing 65 pounds.

Neither high priced feeder lambs nor high priced feeds, nor even both together, render it impossible to secure profits from fattening lambs. It is equally true that neither low priced feeder lambs nor low priced feeds, nor even both together, insure the feeder against loss from his operations. After the feeder has done all in his power to buy feeds and feeder lambs "worth the money" and to produce gains and finish economically, the price for which he may sell his fat lambs finally determines whether his operations shall prove profitable. The influence of varying market conditions as regards both feeder lambs and feeds is a factor in lamb feeding which cannot be controlled by the feeder. Even though it cannot be controlled, it has an important bearing upon the lamb feeding business, and it is highly desirable for the feeder to know how various market prices affect the probability of financial profit from his feeding operations.

Since the financial statement applies only to the market conditions which prevailed during this experiment, Table XVII is presented to show the effect of varying prices of feeder lambs and feeds upon the cost of fat lambs. This table does not, of course, apply to all four of the lots, but, as was previously stated, is computed from the results obtained with Lot 3, fed a heavy ration of corn, with clover hay for roughage. The food consumed for 100 pounds of gain by this lot was 477.81 pounds corn and 451.33 pounds clover hay. The average daily gain per lamb was .244 pounds. It must be understood in connection with this table that a change in the amount of feed consumed per hundred pounds gain, in the initial weight of the lambs or in the amount of gain produced would change the home selling price required to prevent loss. The initial weight of Lot 3 was 2203.3 pounds, the total gain was 1200 pounds. The table is calculated for a wide range of market conditions, and presents some striking facts concerning the results that would be obtained under varying market conditions.

To use Table XVII for, say, hay at $8.00 per ton and corn at 45 cents per bushel, with feeder lambs at 7 cents per pound, follow the vertical column which is headed, "Hay per ton $8.00, Corn per bushel, 45 cents" to its intersection of the horizontal line beginning "$7.00", which, as is seen immediately above the first vertical column, applies to the home price of feeder lambs. The figure at this intersection, $6.52 indicates the price per hundredweight at which the lambs in Lot 3 could have been sold *at home* if they had cost $7.00 per hundredweight *at home* when put on feed with clover at $8.00 per ton and corn at 45 cents per bushel. The *home* selling price necessary to prevent loss with Lot 3, when hay and corn are worth the prices indicated at the top of the table and with feeder lambs at any of the prices indicated in the left hand column, may be ascertained in the same manner as explained above.

TABLE XVII—Influence of varying market conditions.

Hay per ton	$6.00	$8.00	$10.00	$12.00	$6.00	$8.00	$10.00	$12.00	$6.00	$8.00	$10.00	$12.00	$6.00	$8.00	$10.00	$12.00
Corn per bushel	35c	40c	45c	50c	40c	45c	50c	35c	45c	50c	35c	40c	50c	35c	40c	45c
	Assumed value of feeds.															
Assumed home price per cwt. paid for feeder lambs.	Prices at which fat lambs must sell per hundredweight *at home* to pay for feeder lambs and feeds consumed on basis of assumed prices, under the conditions of this experiment.															
$5.00	$4.77	$5.08	$5.39	$5.70	$4.92	$5.23	$5.54	$5.24	$5.07	$5.38	$5.09	$5.40	$5.22	$4.93	$5.24	$5.55
5.25	4.93	5.24	5 55	5 86	5.08	5.39	5.70	5.41	5.23	5.54	5.25	5.56	5.38	5.09	5.40	5.71
5 50	5.09	5.40	5.71	6.02	5.24	5.55	5.86	5.57	5.39	5.70	5.41	5.72	5.54	5.25	5.56	5.87
5 75	5.25	5.56	5 87	6.18	5.40	5.71	6 02	5 73	5.55	5.86	5 57	5.88	5.70	5.41	5.72	6.03
6.00	5.41	5 72	6 03	6.34	5.57	5.87	6.18	5.89	5.72	6.03	5.73	6.04	5.87	5.57	5.88	6.19
6 25	5 58	5.89	6.20	6 51	5.73	6.04	6.35	6.05	5.88	6.19	5.89	6.20	6.03	5.74	6.05	6.35
6.50	5.74	6.05	6.36	6 67	5.89	6.20	6 51	6.22	6.04	6.35	6.06	6.37	6.19	5.90	6.21	6.52
6.75	5 90	6 21	6.52	6 83	6.05	6.36	6.67	6.38	6 20	6.51	6.22	6.53	6.35	6.06	6.37	6.68
7.00	6 06	6.37	6.68	6 99	6.21	6.52	6.83	6.54	6.36	6 67	6.38	6.69	6.51	6.22	6.53	6.84
7.25	6.22	6.53	6.84	7.15	6.37	6.68	6.99	6.70	6.52	6.83	6.54	6.85	6.68	6.38	6.69	7.00
7.50	6 39	6.70	7.01	7 31	6.54	6 85	7.16	6.86	6.69	7.00	6.70	7.01	6.84	6.55	6.85	7.16
7.75	6.55	6.86	7.17	7.48	6.70	7.01	7.32	7.03	6.85	7.16	6.87	7.18	7.00	6.71	7 02	7.33
8.00	6.71	7.02	7.33	7.64	6.86	7.17	7.48	7.19	7.01	7.32	7.03	7.34	7.16	6.87	7.18	7.49
8.25	6.87	7.18	7.49	7.80	7.02	7.33	7.64	7.35	7.17	7.48	7.19	7.50	7.32	7.03	7.34	7.65
8.50	7.03	7.34	7.65	7.96	7.18	7.49	7.80	7.51	7.33	7.64	7.35	7.66	7.48	7.19	7.50	7.81

TABLE XVIII—Summary of two years' work.

	No. of lambs.	Length of test Days	Initial weight Pounds	Total gains Pounds	Average daily gain per lamb Pounds	Concentrates consumed per 100 lbs. gain Pounds	Roughage consumed per 100 lbs. gain Pounds	Total food consumed per 100 lbs. gain Pounds	Shrinkage per cwt. from shipping Percent	Dressed percentages Percent
1905-6.										
Corn, linseed oilmeal, clover and alfalfa	40	103	268⅔	124⅔	302	397 04	463 44	860 48	*4 72	51 1
Corn, stock food, clover and alfalfa	40	103	268	128⅔	313	385 59	442 89	828 48	*4 66	51 9
Corn, cottonseed meal, clover and alfalfa	40	103	266⅓	127⅔	309	337 72	449 00	836 72	*5 09	50 9
Corn, clover and alfalfa	40	103	270	123	298	402 44	458 74	861 18	**4.10	53 5
1906-7.										
Corn, linseed oilmeal and clover	44	112	215⅓	116¾	.236	472 94	502 10	975 04	†6.68	49 05
Corn, stock food and clover	44	112	217¾	115⅔	234	479 83	506.74	986 57	†6 63	47 99
Corn (heavy) and clover	44	112	220⅓	120	244	477 81	451 33	929 14	†6 79	48 71
Corn and clover	44	112	215⅓	113⅔	231	464 98	496.25	961 21	†6.41	48 90

*Shipped to Cleveland, about 90 miles, weighed immediately after unloading.
**Shipped to Pittsburg, about 150 miles allowed feed and water before weighing.

SUMMARY OF TWO YEARS' WORK.

Tables XVIII and XIX present results of the two years' work in condensed form. As all of these data have been discussed in this bulletin or Bulletin 179, extensive comment in this connection is unnecessary.

Since many factors such as initial weight of lambs, breeding of lambs, management previous to beginning of experiments, roughage fed, length of feeding period, and weather conditions varied, it is not possible to account definitely for the variation in gains during the two years. Other feeders in the vicinity reported lower gains in 1906–7 than were obtained in 1905–6.

TABLE XIX—Summary of manure for two years.

Grain Ration	Manure Pounds	Nitrogen Pounds	Phos. acid Pounds	Potash Pounds
1905-6, 40 lambs, 112 days.				
Corn and linseed oilmeal	13,170	205 90	65 72	174 40
Corn and stock food	12,275	165 46	50 96	144 09
Corn and cottonseed oilmeal	12,925	200 74	69 42	159 11
Corn	11,525	171 85	60 04	154 52
1906-7, 44 lambs, 115 1-2 days.				
Corn and linseed oilmeal	11,695	196 70	69 30	145 80
Corn and stock food	11,245	164 65	62 11	135 41
Corn (heavy)	10,430	164 60	60 05	124 12
Corn	9,835	165 26	57 12	136 86

RATIONS

In no instance did any ration prove of outstanding excellence above the others on the basis of amount of feed required to produce 100 pounds gain. So far as rations are concerned the chief use to be made of the data obtained is to emphasize the necessity of choosing *economical* as well as efficient feeds. While the food consumption per hundred pounds gain varied comparatively little in either experiment, the cost of 100 pounds gain was widely different in several instances. A consideration of the cost of feeds involves a study of market quotations, and as is shown by the tests reported, is very necessary if the greatest profits are to be realized. A ration might be economical one year and manifestly extravagant another year.

NITROGENOUS CONCENTRATES.

In general, if the feeding of linseed oilmeal or of cottonseed meal to lambs receiving corn and clover, of corn and alfalfa is to be attended with profit, either of these concentrates should be but little, if any, higher in price per pound than corn.

STOCK FOOD.

Since the lot which received stock food made slightly more economical gains from the standpoint of food consumed for a given gain, than the lot which did not receive it in 1905-06, and in 1906-07 made slightly less economical utilization of the food consumed, it is not possible, on the basis of these experiments, to say that stock food is either beneficial or harmful. The variation in either case was so slight that it cannot be said that it was due to the stock food used.

HEAVY OR MEDIUM GRAIN FEEDING

The results of one experiment indicate that lambs fed upon a heavy grain ration will produce gains with a lower consumption of feed than will lambs fed upon a moderate grain ration. The plan of the test, however, was interfered with somewhat and further work is needed before definite conclusions may safely be drawn.

RATE OF GAIN BY EWES AND BY WETHERS.

Wethers made approximately 10 percent greater gains in live weight than did ewes. These results were very uniform in three different pens, each of which contained 22 ewes and 22 wethers.

MANURE.

Data secured in both of the tests reported herein show that manure from fattening lambs has a very high fertilizing value, on the basis of its nitrogen, phosphoric acid and potash content.

The manure from the lots fed cottonseed meal or linseed oilmeal, carried in every instance more nitrogen, phosphoric acid and potash than did that from the lots fed a grain ration consisting solely of corn. In both experiments the added value of the manure was more than offset by the increased cost of the linseed oilmeal or cottonseed meal. The increased value of the manure produced from different feeds is worthy of consideration, since market conditions might vary sufficiently to justify the feeding of linseed oilmeal or of cottonseed meal from the standpoint of manure production alone.

If sheep manure is to be handled by a manure spreader it is well to supply a fairly liberal amount of bedding. It was found that when only a moderate amount was used, the manure was too solid to be handled well by the spreader.

SHRINKAGE IN SHIPPING.

In all instances where medium grain rations were fed the lots fed corn alone shrank somewhat less in shipment, but the difference was very slight.

DRESSED PERCENTAGE.

The percentage of dressed meat yielded by the various lots cannot be said to have depended in any definite way upon the rations which were fed. The lower percentage yielded in the second test was probably due to the fact that the lambs were not so fat as those fed in 1905-06, and, possibly, to some extent, to some difference in the amount of wool carried by the lambs.

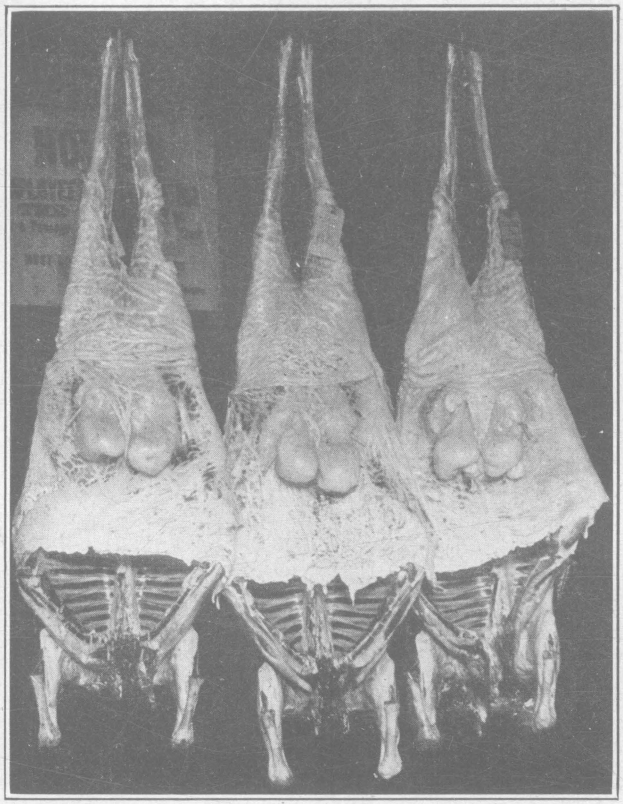

PLATE VII.

Representative carcasses, not intended to show any difference due to feeding. Dressed percentages given in Table X apply to carcasses dressed as shown in cut.

COMMERCIAL CONSIDERATIONS.

The cost of feeder lambs and of feeds has a direct and important bearing upon the fattening of lambs. The feeder of livestock should study market conditions and should know how various changes in them affect his operations.

ANNOUNCEMENT.

The Ohio Agricultural Experiment Station is organized under an act of the General Assembly of Ohio, passed April 17, 1882, and supplemented by an act of Congress, approved March 2, 1887.

WHAT THE STATION CAN DO.

The Station offers its advice and assistance to the farmers of Ohio along the following lines:

The maintenance of soil fertility, including the rotation of crops and the selection and use of manures and fertilizing materials.

The selection of varieties of grains, grasses and forage crops and methods of culture.

The selection of varieties of fruits and vegetables and the management of orchards.

The examination of seeds that are suspected of being unsound or adulterated; the identification of grasses, weeds and other plants; the prevention of fungous diseases of plants.

The identification of insects and the control of such as are injurious.

The feeding of animals, including calculation of rations and use of various feeding stuffs.

The planting and care of forest trees and the management of farm woodlots.

WHAT THE STATION CANNOT DO.

The Station is ***not*** prepared to analyze commercial fertilizers and feeding stuffs, as in Ohio that work is placed in charge of the SECRETARY OF THE STATE BOARD OF AGRICULTURE, at Columbus, to whom all requests for such analyses should be addressed.

The Station is ***not*** prepared to give advice respecting treatment of contagious diseases of animals, that function having been transferred to the State Board of Agriculture in its capacity of State Live Stock Commission. Requests for such advice should therefore be addressed to SECRETARY, STATE LIVE STOCK COMMISSION, Department of Agriculture, Columbus, Ohio.

The Station is ***not*** prepared to examine animals suspected of having been poisoned. Such examinations should be referred to the nearest Veterinarian.

The Station is ***not*** prepared to make official inspection of orchards and nurseries under the law requiring such inspection, that work having been transferred to the STATE BOARD OF AGRICULTURE to whose SECRETARY, Columbus, requests for such inspection should be addressed.

The Station is ***not*** prepared to examine foods, drugs and dairy products suspected of adulteration, as that work is in charge of the OHIO DAIRY AND FOOD COMMISSIONER, whose office is at Columbus.

The Station is ***not*** prepared to analyze drinking water; requests for such analysis should be addressed to the SECRETARY OF THE STATE BOARD OF HEALTH, Columbus.

Visitors to the Station or to its various test farms are welcome at all times during business hours. Persons or parties who contemplate such visits and who desire special attention are requested to write in advance, giving date of proposed visit and probable number of party.

Any citizen of Ohio has the right to apply to the Station for such assistance as it can give, and all such requests will receive prompt attention.

The Bulletins of this Station are sent free to all residents of the State who request them.

Address all communications to

EXPERIMENT STATION,
Wooster, Ohio.